

# Work Order ID 85459

\*85459\*

Page 1

June-08-12 10:02:23 AM

Item ID: D2743

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Crossbolt Spacer

Stop \*NS2\*

Start Date: 08/06/2012 Start Qty: 100.00

\*100\*

Cust Item ID:

Required Date: 22/06/2012 Req'd Qty: 100.00

\*100\*

Customer:

Reference:

Approvals: Process Plan: MLT

Date: 12/06/08

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

Draw Nbr

Revision Nbr

D2743

Rev B

100

0.00

\*100\*

Hardinge CNC LATHE SMALL

12/06/08

129

Hardinge

Memo

0.00

Hardinge CNC Lathe Small

1-TURN AS PER FOLIO FA202 & DWG D2743

28 12-7-2

FOLIO REV: A4

DWG REV: B

2-DEBURR AS REQUIRED

110

QC2- Inspect parts off machine FAI/FAIB

0.00

\*110\*

12/06/08

129

QC

Memo

0.00

Quality Control

28 12-7-2

# Work Order ID 85459

**\*85459\***

Page 2

June-08-12 10:02:23 AM

Item ID: D2743      Accept      **\*N900040100\***      Setup Start **\*NS1\***  
 Revision ID:      Stop **\*NS2\***  
 Item Name: Crossbolt Spacer  
 Start Date: 08/06/2012      Start Qty: 100.00      **\*100\***      Cust Item ID:  
 Required Date: 22/06/2012      Req'd Qty: 100.00      **\*100\***      Customer:  
 Reference:

Approvals:      Process Plan:      Date:      Tooling:      Date:      Run Start **\*NR1\***  
                  QC:      Date:      SPC (Y/N):      Date:      Stop **\*NR2\***

| Sequence ID/<br>Work Center ID                | Operation<br>Description  | Set Up/<br>Run Hours | Tool ID   | Tool #       | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|---|---|----------------------|-----------|--------------|--------------|---------------|---------------|------------------|----------------|
| 120<br><b>*120*</b><br>QC<br>Quality Control  | QC8- Inspect parts - second check<br><br>Memo   | 0.00<br>0.00         | <i>SA</i> | <i>12713</i> |              | <i>126</i>    | <i>φ</i>      |                  |                |
| 130<br><b>*130*</b><br>Skidtubes<br>Skidtubes | Memo<br>1- Clean crossbolt spacer with ultra bright aluminum cleaner                        | 0.00<br>0.00         |           |              |              | <i>126</i>    | <i>7/6</i>    | <i>12-7-12</i>   |                |
| 160<br><b>*160*</b><br>Packaging<br>Packaging | Identify as per dwg & Stock Location: <i>LG</i><br><br>Memo<br>***STOCK IN SKIDTUBE CELL*** | 0.00<br>0.00         |           |              |              | <i>126</i>    | <i>7/6</i>    | <i>12-7-12</i>   |                |

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |   |   |                                      |                                    |  |                                      |                                    |                                    |  |                                  |  |                                    |                                   |  |                                    |                                    |                                |  |
|--|---|---|--------------------------------------|------------------------------------|--|--------------------------------------|------------------------------------|------------------------------------|--|----------------------------------|--|------------------------------------|-----------------------------------|--|------------------------------------|------------------------------------|--------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td></td> </tr> </table> | Skid-tube <input type="checkbox"/>   | Crosstube <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Supplier <input type="checkbox"/> |  | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Other <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Crosstube <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>  | Engineering <input type="checkbox"/> |                                    |  |                                      |                                    |                                    |  |                                  |  |                                    |                                   |  |                                    |                                    |                                |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>  | Quality <input type="checkbox"/>     |                                    |  |                                      |                                    |                                    |  |                                  |  |                                    |                                   |  |                                    |                                    |                                |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Supplier <input type="checkbox"/>   |                                      |                                    |  |                                      |                                    |                                    |  |                                  |  |                                    |                                   |  |                                    |                                    |                                |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Other <input type="checkbox"/>  |                                      |                                    |  |                                      |                                    |                                    |  |                                  |  |                                    |                                   |  |                                    |                                    |                                |  |

| Root Cause                             | Date | Step | Qty | Description of work order update or Non-conformance | Initial Chief Eng | Action Description | Sign & Date | Verification | QC Inspector |
|--|------|------|-----|---|-------------------|--------------------|-------------|--------------|--------------|
| Doc/Data <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Equip/Tooling <input type="checkbox"/> |      |      |     |   |                   |                    |             |              |              |
| Operator <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Material <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Offset/Setup <input type="checkbox"/>  |      |      |     |   |                   |                    |             |              |              |
| Other <input type="checkbox"/>         |      |      |     |   |                   |                    |             |              |              |
| Process <input type="checkbox"/>       |      |      |     |   |                   |                    |             |              |              |
| Supplier <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Training <input type="checkbox"/>      |      |      |     |   |                   |                    |             |              |              |
| Unauthorized <input type="checkbox"/>  |      |      |     |   |                   |                    |             |              |              |

### FAULT CATEGORY

|   |  |   |  |
|---|--|---|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending Passes Below Min<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimp at Bending<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Other<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Ripples on Inner Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>Hardware</b><br><input type="checkbox"/> Breaking<br><input type="checkbox"/> Missing<br><input type="checkbox"/> Size/Length<br><input type="checkbox"/> Spinning<br><input type="checkbox"/> Threading<br><input type="checkbox"/> Wrong<br><br><b>Drill Holes</b><br><input type="checkbox"/> Misaligned<br><input type="checkbox"/> Ovalized<br><input type="checkbox"/> Over/Undersized<br><input type="checkbox"/> Too Many | <b>General</b><br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Documentation/Data<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Inspection Incomplete<br><input type="checkbox"/> Inspection Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Jigs/Fixtures/Tooling<br><input type="checkbox"/> Kit Incorrect<br><input type="checkbox"/> Kit Missing | <input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Off-Set<br><input type="checkbox"/> Orientation Misread<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Lost<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Raw Material<br><br><input type="checkbox"/> Set-up<br><input type="checkbox"/> Supplier<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><input type="checkbox"/> Other<br>_____<br>_____<br>_____ |
|---|--|---|--|

**Work Order ID 85459****\*85459\***

Page 3

June-08-12 10:02:23 AM

Item ID: D2743

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Crossbolt Spacer

Stop **\*NS2\***

Start Date: 08/06/2012 Start Qty: 100.00

**\*100\***

Cust Item ID:

Required Date: 22/06/2012 Req'd Qty: 100.00

**\*100\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

170

QC21- Final Inspection - Work Order Release

0.00

**\*170\***

QC

Memo

0.00

Quality Control

MLJ 12/07/13  
MLJ 12/07/13

# Picklist Print

June-08-12 10:02:27 AM

Page 1

Work Order ID: 85459

\*85459\*

Parent Item: D2743

\*D2743\*

Parent Item Name: Crossbolt Spacer

Start Date: 08/06/2012

Required Date: 22/06/2012

Start Qty: 100.00

Required Qty: 100.00

Comments: IPP E05.04.13Reformat; removed tumble and deburr stepKJ/JLM

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| M6061T6T0.625W.065              |                        | Purchased     | No          |                     |                  | 100             | f                  | 5.4510         | 0.2667      | 28.07368     |               |                |        |
| *M6061T6T0 625W 065*            |                        |               |             |                     |                  |                 |                    |                |             | **           | 29 12-7-2     |                |        |
| 6061-T6 RD Tube .625 x.065W     |                        |               |             |                     |                  |                 |                    |                |             |              |               |                |        |

Location

Loc Qty

Loc Code

MAT014

5.451

117598

2.251

120633

3.2

→ 122051

32.55'

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

|  |      |      |     |   |                   |   |             |              |              |  |  |
|--|------|------|-----|---|-------------------|---|-------------|--------------|--------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |      |      |     | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Work Order Update <input type="checkbox"/> |                   | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> <div>           Engineering Quality <input type="checkbox"/><br/> <input type="checkbox"/><br/> <input type="checkbox"/><br/> <input type="checkbox"/> </div> </div> |             |              |              |  |  |
| Root Cause   | Date | Step | Qty | Description of work order update or Non-conformance   | Initial Chief Eng | Action Description  | Sign & Date | Verification | QC Inspector |  |  |
| Doc/Data <input type="checkbox"/>                            |      |      |     |   |                   |   |             |              |              |  |  |
| Equip/Tooling <input type="checkbox"/>                       |      |      |     |   |                   |   |             |              |              |  |  |
| Operator <input type="checkbox"/>                            |      |      |     |   |                   |   |             |              |              |  |  |
| Material <input type="checkbox"/>                            |      |      |     |   |                   |   |             |              |              |  |  |
| Offset/Setup <input type="checkbox"/>                        |      |      |     |   |                   |   |             |              |              |  |  |
| Other <input type="checkbox"/>                               |      |      |     |   |                   |   |             |              |              |  |  |
| Process <input type="checkbox"/>                             |      |      |     |   |                   |   |             |              |              |  |  |
| Supplier <input type="checkbox"/>                            |      |      |     |   |                   |   |             |              |              |  |  |
| Training <input type="checkbox"/>                            |      |      |     |   |                   |   |             |              |              |  |  |
| Unauthorized <input type="checkbox"/>                        |      |      |     |   |                   |   |             |              |              |  |  |

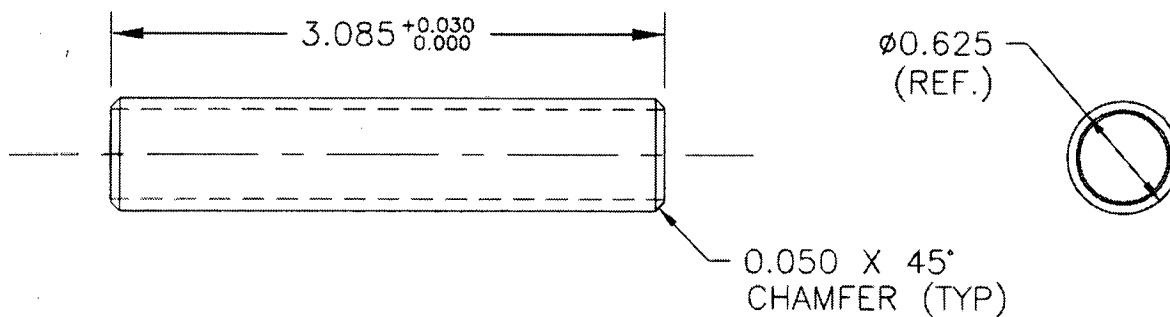
| FAULT CATEGORY  |  |   |  |  |
|---|--|---|--|--|
| <b>Landing Gear</b><br><input type="checkbox"/> Bending Passes Below Min<br><input type="checkbox"/> Centre Not Concentric to O/S<br><input type="checkbox"/> Cracks<br><input type="checkbox"/> Crushed/Crimp at Bending<br><input type="checkbox"/> Inspection Strip in Tube<br><input type="checkbox"/> Other<br><input type="checkbox"/> Positioned Wrong<br><input type="checkbox"/> Ripples on Inner Bend<br><input type="checkbox"/> Torque Waves in Extrusion<br><input type="checkbox"/> Turning Sequence<br><input type="checkbox"/> Wave/Twist in Tube | <b>Hardware</b><br><input type="checkbox"/> Breaking<br><input type="checkbox"/> Missing<br><input type="checkbox"/> Size/Length<br><input type="checkbox"/> Spinning<br><input type="checkbox"/> Threading<br><input type="checkbox"/> Wrong<br><br><b>Drill Holes</b><br><input type="checkbox"/> Misaligned<br><input type="checkbox"/> Ovalized<br><input type="checkbox"/> Over/Undersized<br><input type="checkbox"/> Too Many | <b>General</b><br><input type="checkbox"/> Burrs<br><input type="checkbox"/> Contamination<br><input type="checkbox"/> Cut Too Short<br><input type="checkbox"/> Documentation/Data<br><input type="checkbox"/> Finish<br><input type="checkbox"/> Inspection Incomplete<br><input type="checkbox"/> Inspection Unqualified<br><input type="checkbox"/> Instructions Incomplete/Unclear<br><input type="checkbox"/> Jigs/Fixtures/Tooling<br><input type="checkbox"/> Kit Incorrect<br><input type="checkbox"/> Kit Missing | <input type="checkbox"/> Maintenance<br><input type="checkbox"/> Mislabeled<br><input type="checkbox"/> Off-Set<br><input type="checkbox"/> Orientation Misread<br><input type="checkbox"/> Out of Calibration<br><input type="checkbox"/> Out of Sequence<br><input type="checkbox"/> Outside Dimensions<br><input type="checkbox"/> Over/Under tolerance<br><input type="checkbox"/> Part Lost<br><input type="checkbox"/> Part Moved<br><input type="checkbox"/> Raw Material | <input type="checkbox"/> Set-up<br><input type="checkbox"/> Supplier<br><input type="checkbox"/> Temperature/Cure<br><input type="checkbox"/> Weld<br><input type="checkbox"/> Wrong Stock Pulled<br><br><input type="checkbox"/> Other<br>_____<br>_____<br>_____ |





|                       |                       |  |                        |
|-----------------------|-----------------------|--|------------------------|
| DESIGN<br><i>WHA</i>  | DRAWN BY<br><i>CP</i> | DART AEROSPACE USA, INC.<br>BELLEVUE, WA |                        |
| CHECKED<br><i>WHA</i> | APPROVED<br><i>KE</i> | DRAWING NO.<br>D2743                     | REV. B<br>SHEET 1 OF 1 |
| DATE<br>98.12.08      |                       | TITLE<br>CROSS BOLT SPACER               | SCALE<br>1:1           |
| A                     | 98.04.16              | NEW ISSUE                                |                        |
| B                     | 98.12.08              | 3.085 WAS 3.060                          |                        |

RELEASED  
98.12.16 DS



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. *85458*  
*12/06/08*

MATERIAL: 6061-T6 (WW-T-700/6) 0.625 DIA. X 0.065 WALL  
TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED